



## INTERNAL CORRESPONDENCE

1507

## UNION CARBIDE NUCLEAR COMPANY • POST OFFICE BOX P, OAK RIDGE, TENNESSEE

To (Name) J. A. Marshall  
 Company  
 Location

Copy to A. F. Becher  
 R. H. Dyer  
 J. P. Jones  
 R. L. Newton  
 H. M. Preus  
 W. L. Richardson  
 H. G. P. Snyder  
 File ✓

Date June 8, 1960

Originating Dept.

Answering letter date

Subject Industrial Hygiene Air Analyses  
 of Typical Maintenance Activities  
 in Process Buildings. March 17, 1960  
 through April 27, 1960

At the request of Mr. J. C. Worthington of the Safety and Health Physics Department a series of industrial hygiene air samples were taken at typical maintenance activities in three process buildings and one maintenance shop. The main purpose of these air samples was to determine the concentration of hydrogen fluoride in the industrial environment where the wearing of respiratory protection is recommended. The samples were analyzed for uranium also, the associated alpha activity was determined on a few of them. See report Nos. 260, 261 and 262 attached.

The results of analyses for hydrogen fluoride in 159 air samples taken at seven different maintenance jobs in the three plant areas gave an average of 2.6 ppm. This may be compared with the results of 188 samples in 1958 with an average of 24.2 ppm hydrogen fluoride and 53 samples in 1959 with an average of 14.4 ppm hydrogen fluoride. See Industrial Hygiene Air Sampling report Nos. 262, 269, 277, 285, 288 and 350 for 1958 and reports 497 and 559 for 1959.

The results of analyses for hydrogen fluoride and uranium in three one-half hour air samples and two tests for phosgene made during the refabrication of used freon piping gave results not significantly different from zero. See report No. 263 attached.

The sampling program presented an opportunity to test the field application of the continuously recording Fluoride Analyzer. Agreement between the impinger collected samples and the recorded level is very good with a few exceptions. The charts are available in the Industrial Hygiene Department for examination along with the field data sheets.

D. L. Stoddard

Industrial Hygiene Department

This document has been approved for release  
 to the public by:

A. J. Miskell 4/18/95  
 Technical Information Officer  
 Oak Ridge K-25 Site

DLS:mh

Oak Ridge K-25 Site  
 Oak Ridge, Tennessee 37831-7314  
 managed by  
**MARTIN MARIETTA ENERGY SYSTEMS, INC.**  
 for the U.S. DEPARTMENT OF ENERGY  
 under Contract DE-AC05-84OR21400

COPY TO:

J. A. Marshall      M. L. Richardson  
 A. P. Becker      H.O.P. Saydor  
 R. H. Dyer      File  
 J. P. Jones  
 E. L. Newton  
 H. M. Preuss

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT

NUMBER 260  
 Routine  
 Special I  
 Requested by J. C. Worthington  
 Date 6-8-90

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-301-S	3-31-90	Cell No. 1 Jumbo Cell By pump 5a	0930 - 0930	Uranium Hydrogen Fluoride Alpha Activity	0.01 $\mu\text{g}/\text{m}^3$ 1.4 ppm 0.1 c/a/ $\text{ft}^3$	Employees, wearing respirators, cut converters out.
			0930 - 0930		0.01 $\mu\text{g}/\text{m}^3$ 0.6 ppm 0.3 c/a/ $\text{ft}^3$	Converters removed in west end of cell.
			0930 - 1000		0.01 $\mu\text{g}/\text{m}^3$ 0.4 ppm 1.3 c/a/ $\text{ft}^3$	Converters removed in east end of cell.
			1000 - 1030		<0.01 $\mu\text{g}/\text{m}^3$ 0.4 ppm 0.1 c/a/ $\text{ft}^3$	Welded in converters in west end.
			1030 - 1100		<0.01 $\mu\text{g}/\text{m}^3$ 0.3 ppm 0.1 c/a/ $\text{ft}^3$	
			1100 - 1130		<0.01 $\mu\text{g}/\text{m}^3$ 0.4 ppm 0.1 c/a/ $\text{ft}^3$	
			1130 - 1230		0.01 $\mu\text{g}/\text{m}^3$ 0.2 ppm 0.1 c/a/ $\text{ft}^3$	
			1230 - 1300		<0.01 $\mu\text{g}/\text{m}^3$ 0.2 ppm 0.0 c/a/ $\text{ft}^3$	Holding in progress. Most workers did not wear respirators while working in converters.

Oak Ridge K-25 Site  
 Oak Ridge, Tennessee 37831-7314  
 MARTIN MARKEITA ENERGY SYSTEMS, INC.  
 managed by  
 for the U.S. DEPARTMENT OF ENERGY  
 under Contract DE-AC05-94OR21400

This document has been approved for release  
 to the public by:  
 AD Quist  
 Technical Information Officer  
 Oak Ridge K-25 Site  
 4/18/95  
 Date

COPY TO:

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

NUMBER 269 Page 2
 Routine   
 Special   
 Requested by J. C. Worthington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-303-5	3-21-60	Cell No. 1 Insides Cell By pump S-1	1330 - 1330	Uranium Hydrogen Fluoride Alpha Activity	< 0.01 mg/m <sup>3</sup> 0.2 ppm < 0.1 c/s/ft <sup>3</sup>	Building in progress.
			1330 - 1400		0.01 mg/m <sup>3</sup> 0.3 ppm 0.0 c/s/ft <sup>3</sup>	
			1400 - 1430		0.01 mg/m <sup>3</sup> 0.2 ppm 0.1 c/s/ft <sup>3</sup>	
			1430 - 1500		0.01 mg/m <sup>3</sup> 0.1 ppm 0.1 c/s/ft <sup>3</sup>	Leak testing started.
			0830 - 0900		0.02 mg/m <sup>3</sup> 3.1 ppm 0.3 c/s/ft <sup>3</sup>	Employees, without respirators, entered on 3 pump.
			0900 - 0930		0.01 mg/m <sup>3</sup> 0.8 ppm 0.1 c/s/ft <sup>3</sup>	0920: Employees started wearing respirators.
			0930 - 1000		0.03 mg/m <sup>3</sup> 0.9 ppm 0.1 c/s/ft <sup>3</sup>	3 pumps were removed.
			1000 - 1030		0.01 mg/m <sup>3</sup> 0.1 ppm 0.0 c/s/ft <sup>3</sup>	

In Garage Alley  
By outlet D-21

## COPY TO:

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORTNUMBER 260 Page 3Routine   
Special   
Requested by J. C. Worthington  
Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-303-5	3-31-60	Cell No. 1 In Scraper Alley By column D-11	1030 - 1130	Uranium Hydrogen Fluoride Alpha Activity	< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	Welding inside cell. Exhaust fan was off.
			1130 - 1230		< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	
			1230 - 1330		< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	
			1330 - 1430		< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	
			1430 - 1530		< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	
			1530 - 1630		< 0.01 mg/m <sup>3</sup> 0.1 ppm < 0.1 c/s/m <sup>3</sup>	

COPY TO:

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT

NUMBER 360 Page b  
 Routine \_\_\_\_\_  
 Special \_\_\_\_\_  
 Requested by J. C. Worthington  
 Date 6-1-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-203-3	6-21-60	Cell No. 5 Inside Cell By converter No. 5	0830 - 0900	Uranium Hydrogen Fluoride Alpha Activity	0.03 mg/m <sup>3</sup> 2.0 ppm 13.8 c/m <sup>3</sup>	Employee, wearing respirators, cut converters out.
			0900 - 0930		0.05 mg/m <sup>3</sup> 1.0 ppm 25.0 c/m <sup>3</sup>	Converters removed.
			0930 - 1000		0.02 mg/m <sup>3</sup> 1.1 ppm	Employee, wearing respirators, removed converters. 0930: Converters 3 and 4 removed.
			1000 - 1030		0.01 mg/m <sup>3</sup> 1.4 ppm	2000: Converters 1 and 2 removed. Some welding in east end of cell.
			1030 - 1100		0.01 mg/m <sup>3</sup> 0.6 ppm	Absent one employee of four wearing respirator in cell while welding in progress.
			1100 - 1130		0.01 mg/m <sup>3</sup> 0.2 ppm	welding in progress.
			1130 - 1200		0.07 mg/m <sup>3</sup> 0.3 ppm 0.2 c/m <sup>3</sup>	

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER 360 Page 5

 Routine   
 Special   
 Requested by J. C. Worthington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS	
K-202-3	6-22-60	Cell No. 5 By conveyor No. 3	1000 - 1030 1030 - 1100 1100 - 1130 1130 - 1125 1145 - 1145 1145 - 1145 0925 0930 - 0930 0915 0930 - 0930 0930 - 1000	Uranium Hydrogen Fluoride	0.01 mg/m <sup>3</sup> 0.3 ppm 0.01 mg/m <sup>3</sup> 0.2 ppm 0.01 mg/m <sup>3</sup> 0.1 ppm 0.01 mg/m <sup>3</sup> 0.3 ppm 0.01 mg/m <sup>3</sup> 0.3 ppm 0.02 mg/m <sup>3</sup> 0.1 ppm 0 ppm Uranium Hydrogen Fluoride Hydrogen Uranium Hydrogen Fluoride 0.02 mg/m <sup>3</sup> 0.8 ppm 0.01 mg/m <sup>3</sup> 0.5 ppm	Employees in cell, without respirators, welding on equipment.	Coolant leaked from cut pipe Employees, wearing respi- rators, worked on pipe. Coolant leaked from cut pipe Employees were not wear- ing respirators while in alley after 0930.
						In Garage Alley By pump 2A	

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER 360 Page 6

ROUTINE

ROUTINE  
SPECIALREQUESTED BY J. C. Hartung  
DATE 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
L-21-60	Cell No. 5 In storage area By pump 3-1					
L-203-2	1030 - 1030	Uranium Hydrogen Fluoride		< 0.01 mg/m <sup>3</sup> 0.2 ppm	0.01 mg/m <sup>3</sup> 0.1 ppm	Employees, without respirators, removed pumps.
	1030 - 1100			< 0.01 mg/m <sup>3</sup> 0.3 ppm	0.01 mg/m <sup>3</sup> 0.5 ppm	Employees, wearing respirators, cleaned out pump casing.
	1100 - 1130			0.01 mg/m <sup>3</sup> 0.3 ppm	0.01 mg/m <sup>3</sup> 0.4 ppm	Replaced pumps.
	1130 - 1200			0.01 mg/m <sup>3</sup> 0.4 ppm	0.01 mg/m <sup>3</sup> 0.5 ppm	
	1200 - 1230			0.01 mg/m <sup>3</sup> 0.5 ppm	0.01 mg/m <sup>3</sup> 0.6 ppm	Employees, without respirators, replaced pumps.
	1230 - 1300			0.01 mg/m <sup>3</sup> 0.6 ppm	0.01 mg/m <sup>3</sup> 0.7 ppm	
	1300 - 1330			0.01 mg/m <sup>3</sup> 0.7 ppm	0.01 mg/m <sup>3</sup> 0.8 ppm	
	1330 - 1415			0.01 mg/m <sup>3</sup> 0.8 ppm	0.01 mg/m <sup>3</sup> 0.9 ppm	
	1415 - 1415			0.01 mg/m <sup>3</sup> 0.9 ppm	0.01 mg/m <sup>3</sup> 1.0 ppm	Employees, without respirators, in area.
	1415 - 1535			0.01 mg/m <sup>3</sup> 0.9 ppm	0.01 mg/m <sup>3</sup> 1.0 ppm	

COPY TO:

J. A. Marshall  
 J. P. Bechtel  
 R. H. Dyer  
 J. P. Jones  
 R. L. Weston  
 H. H. French

M. L. Richardson  
 H. G. P. Snyder  
 Bill

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT

NUMBER 261  
 Routine  
 Special X  
 Requested by J. C. Washington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-102-1	6-8-60	Cell No. 9 In 102 Cell By south door By pump 2-3	0925 - 0945	Uranium Hydrogen Fluoride Alpha Activity	0.01 mg/m <sup>3</sup> 0.7 ppm 0.1 c/s/ft <sup>3</sup>	Employees out converter cut.
			1025 - 1055		0.01 mg/m <sup>3</sup> 0.6 ppm 0.1 c/s/ft <sup>3</sup>	Converters removed from south end.
			1055 - 1125		0.05 mg/m <sup>3</sup> 0.7 ppm 0.7 c/s/ft <sup>3</sup>	Converters replaced in south end.
			1125 - 1225		0.01 mg/m <sup>3</sup> 0.6 ppm 0.7 c/s/ft <sup>3</sup>	Converters by sampler removed.
			1225 - 1255		0.02 mg/m <sup>3</sup> 0.3 ppm 0.7 c/s/ft <sup>3</sup>	Converters replaced.
			1255 - 1325		0.01 mg/m <sup>3</sup> 0.3 ppm 0.1 c/s/ft <sup>3</sup>	Welding in converter.
			1325 - 1355		0.01 mg/m <sup>3</sup> 0.1 ppm 0.1 c/s/ft <sup>3</sup>	Very little welding.
			1355 - 1425		0.01 mg/m <sup>3</sup> 0.3 ppm 0.1 c/s/ft <sup>3</sup>	Instrument mechanics, without respirators, connecting lines.

COPY TO:

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORTNUMBER 261 Page 2Routine   
Special   
Requested by J. C. Worthington  
Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-402-1	3-23-60	Cell No. 9 Inside Cell By pump 2-3	1125 - 1155	Uranium Hydrogen Fluoride Alpha Activity	0.01 mg/m <sup>3</sup> 0.4 ppm 0.1 c/m <sup>3</sup>  0.15 mg/m <sup>3</sup> 0.4 ppm 2.2 c/m <sup>3</sup>  0.01 mg/m <sup>3</sup> 0.2 ppm 0.1 c/m <sup>3</sup>	Very little welding in progress.
			1125 - 1125		0.06 mg/m <sup>3</sup> 1.6 ppm 0.5 c/m <sup>3</sup>	Employees, wearing respirators, cut converters out.
			1125 - 1155		0.02 mg/m <sup>3</sup> 2.1 ppm 0.7 c/m <sup>3</sup>	Converters removed from south end of cell.
			0910 - 0940		0.02 mg/m <sup>3</sup> 1.0 ppm 0.3 c/m <sup>3</sup>	Converters removed from south end of cell.
			0910 - 1010		0.02 mg/m <sup>3</sup> 0.9 ppm 0.4 c/m <sup>3</sup>	Replaced converters in cell 9. Cut converters out of cell 10.
			1010 - 1055		0.02 mg/m <sup>3</sup> 1.0 ppm 0.3 c/m <sup>3</sup>	Removed converters in middle of cell 9. Cut converter out of cell 10.
			1055 - 1125		0.02 mg/m <sup>3</sup> 1.0 ppm 0.1 c/m <sup>3</sup>	
			1125 - 1125			

In Escape Alley  
By column 0-15

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER **261 Page 3**  
 Routine   
 Special   
 Requested by **J. C. Martingation**  
 Date **6-6-60**

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-102-1	3-22-60	Cell No. 2 In Startup Alley By column 0-15	1225 - 1255	Uranium Hydrogen Fluoride Alpha activity	0.02 mg/m <sup>3</sup> 0.3 ppm 0.3 c/m <sup>3</sup> /ft <sup>3</sup>	Converters replaced.
			1255 - 1325		0.01 mg/m <sup>3</sup> 0.6 ppm 0.1 c/m <sup>3</sup> /ft <sup>3</sup>	
			1325 - 1355		0.02 mg/m <sup>3</sup> 0.2 ppm 2.6 c/m <sup>3</sup> /ft <sup>3</sup>	welding in converters.
			1355 - 1425		0.01 mg/m <sup>3</sup> 0.5 ppm 0.1 c/m <sup>3</sup> /ft <sup>3</sup>	Very little welding in cell
			1425 - 1455		0.01 mg/m <sup>3</sup> 0.4 ppm	9. Cut process pipe in cell 10.
			1455 - 1525		0.01 mg/m <sup>3</sup> 0.3 ppm	Very little welding in cell
			1525 - 1555		0.01 mg/m <sup>3</sup> 0.1 ppm	9. Some scarffing in cell 10.

## COPY TO:

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT

NUMBER 261 Page 4

Routine

Special

Requested by J. C. Worthington  
Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-402-7	6-13-60	Cell No. 9 In front of Cell By stages No. 1.	0930 - 0930	Uranium Hydrogen Fluoride Alpha activity	0.25 $\mu\text{g}/\text{m}^3$ 5.0 ppm 22.7 c/m. <sup>3</sup>	Employees, wearing respirators, cut equipment out. Stages 3, 4, 5 and 6 removed.
			0930 - 0930		0.01 $\mu\text{g}/\text{m}^3$ 3.1 ppm	Employees cut valves and some process pipe out. Several employees in cell without respiratory protection.
			0930 - 1030		0.12 $\mu\text{g}/\text{m}^3$ 0.4 ppm 0.5 c/m. <sup>3</sup>	All converters out of cell. Process piping being removed.
			1030 - 1030		0.01 $\mu\text{g}/\text{m}^3$ 0.5 ppm	Converters replaced in cell and process pipe removed.
			1130 - 1130		0.01 $\mu\text{g}/\text{m}^3$ 0.2 ppm	
			1130 - 1200		0.01 $\mu\text{g}/\text{m}^3$ 0.3 ppm	Instrument mechanism, without respirators, worked in cell.
			1200 - 1230		0.01 $\mu\text{g}/\text{m}^3$ 0.3 ppm	Rest of employees in cell were without respiratory protection.

## COPY TO:

INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT

NUMBER 262 Page 5  
 Routine \_\_\_\_\_  
 Special  \_\_\_\_\_  
 Requested by J. C. Huntington  
 Date 1-18-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-408-7	4-13-60	Cell No. 9 Isolde Cell By stage No. 4	1230 - 1300	Uranium Hydrogen Fluoride	0.01 mg/m <sup>3</sup> 0.3 ppm 0.06 mg/m <sup>3</sup> 0.1 ppm 0.5 cpm/ft <sup>3</sup>	Most of the employees in cell were without respira- tory protection.  Employees worked concur- rently with process pipe. Most of the employees in cell were without respiratory protec- tion.
			1330 - 1350	Alpha Activity	0.01 mg/m <sup>3</sup> 0.2 ppm 0.01 mg/m <sup>3</sup> 0.1 ppm 0.17 mg/m <sup>3</sup> 0.2 ppm 1.1 cpm/ft <sup>3</sup>	
			1330 - 1400		0.02 mg/m <sup>3</sup> 0.2 ppm	
			1430 - 1450		0.01 mg/m <sup>3</sup> 0.1 ppm	
			1430 - 1500		0.02 mg/m <sup>3</sup> 0.2 ppm	
			1530 - 1550		0.02 mg/m <sup>3</sup> 0.2 ppm	
			1530 - 1600		0.01 mg/m <sup>3</sup> 0.1 ppm	
			0830 - 0900	In Garage Alley By pump 3-4	0.01 mg/m <sup>3</sup> 0.6 ppm	Equipment was being cut out of cell.
			0900 - 0930		0.01 mg/m <sup>3</sup> 0.1 ppm 11.1 cpm/ft <sup>3</sup>	Employees, wearing respira- tors, worked on removal of D pumps in alley.

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER 261 Page 6  
 Routine   
 Special   
 Requested by J. G. Worthington  
 Date 5-2-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-402-7	4-13-60	Cell No. 9 In Escapa Alley By pump 3-A	0830 - 1030	Uranium Hydrogen Fluoride	0.01 mg/m <sup>3</sup> 0.1 ppm	Equipment in cell 10 out.
			1000 - 1030		0.01 mg/m <sup>3</sup> 0.1 ppm	
			1030 - 1100		0.01 mg/m <sup>3</sup> 0.6 ppm	Converters removed from cell 10.
			1100 - 1130		0.01 mg/m <sup>3</sup> 0.6 ppm	
			1130 - 1200		0.01 mg/m <sup>3</sup> 0.6 ppm	Electrical mechanics, without out respirators, worked in alley.
			1200 - 1230		0.01 mg/m <sup>3</sup> 0.6 ppm	
			1230 - 1300		0.01 mg/m <sup>3</sup> 0.7 ppm	
			1300 - 1330		0.01 mg/m <sup>3</sup> 0.1 ppm	Two out of ten employees wore respirators while working on pump.
			1330 - 1400		0.01 mg/m <sup>3</sup> 0.2 ppm	All converters had been removed from cell 10.
			1400 - 1430		0.01 mg/m <sup>3</sup> 0.1 ppm	Same cutting or process pipes in cell 10 and welding of equipment in cell 9.

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER 261 Page 7  
 Routine 1  
 Special 1  
 Requested by S. C. Manufacturing  
 Date 6-16-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
<u>K-102-7</u>	<u>6-13-60</u>	<u>cell No. 9 In escape Al Day by pump 34</u>	<u>1430 - 1500 1500 - 1530 1530 - 1600</u>	<u>Uranium Hydrogen Fluoride</u>	<u>0.01 mE/m<sup>3</sup> 0.1 ppm 0.01 mE/m<sup>3</sup> 0.1 ppm 0.01 mE/m<sup>3</sup> 0.1 ppm</u>	

COPY TO: J. A. Marshall  
 A. F. Bechtel  
 H. H. Dyer  
 J. P. Jones  
 R. L. Keaton  
 N. M. Kreus

M. L. Richardson  
 R.G.P. Snyder  
 Billie

INDUSTRIAL HYGIENE  
 AIR SAMPLING REPORT

NUMBER 262  
 Routine X  
 Special  
 Requested by J. C. Martington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-602-1	3-17-60	Cell No. 7 Stage No. 1	0915 - 0920	Uranium Hydrogen Fluoride Alpha Activity	0.11 mg/m <sup>3</sup> 2.5 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	Employee, wearing respirator, cut converter open.
			0920 - 0925		0.01 mg/m <sup>3</sup> 5.1 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	Employee, wearing respirator, chipped slag.
			0925 - 0930		0.02 mg/m <sup>3</sup> 4.5 ppm 0.1 c/m <sup>3</sup> /ft <sup>3</sup>	
			0930 - 0935		0.11 mg/m <sup>3</sup> 6.2 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	
			0935 - 0940		0.01 mg/m <sup>3</sup> 4.5 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	Employee, wearing respirator, replaced flange on converter.
			0940 - 0945		0.02 mg/m <sup>3</sup> 5.7 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	Employee, wearing respirator, check sealed flange in place.
			0945 - 0950		0.01 mg/m <sup>3</sup> 4.8 ppm 0.1 c/m <sup>3</sup> /ft <sup>3</sup>	
			0950 - 0955		0.02 mg/m <sup>3</sup> 2.3 ppm 0.0 c/m <sup>3</sup> /ft <sup>3</sup>	Cover placed over converter opening.

COPY TO:

**INDUSTRIAL HYGIENE  
AIR SAMPLING REPORT**

NUMBER 262 Page 2

ROUTINE

SPECIAL 

Requested by J. C. Mortuanga

Date 6-8-69

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	OBSERVATIONS AND REMARKS	
					RESULT	
E-602-1	3-17-69	Cell No. 7 Storage No. 1	0955 - 1000	Irradiation Hydrogen Fluoride Alpha Activity	0.001 mg/m <sup>3</sup> 2.5 ppm 0.0 c/m <sup>3</sup>	
			1000 - 1005		0.003 mg/m <sup>3</sup> 2.5 ppm 0.0 c/m <sup>3</sup>	
			1005 - 1010		0.002 mg/m <sup>3</sup> 2.1 ppm 0.1 c/m <sup>3</sup>	
			1010 - 1015		0.002 mg/m <sup>3</sup> 2.5 ppm 0.0 c/m <sup>3</sup>	
			1015 - 1020		0.001 mg/m <sup>3</sup> 1.0 ppm 0.0 c/m <sup>3</sup>	Employee, wearing respirator, utilized flange on converter.
			1020 - 1100		0.001 mg/m <sup>3</sup> 0.5 ppm 0.0 c/m <sup>3</sup>	
			1100 - 1130		0.60 mg/m <sup>3</sup> 132.5 ppm 0.5 c/m <sup>3</sup>	Flange cover removed.
			1130 - 1200		0.52 mg/m <sup>3</sup> 121.0 ppm 0.1 c/m <sup>3</sup>	

COPY TO:

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

NUMBER 262 Page 3

 Routine   
 Special   
 Requested by J. C. Worthington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-602-1	3-17-60	Cell No. 7 Stage No. 2	1200 - 1230	Uranium Hydrogen Fluoride Alpha Activity	0.36 mg/m <sup>3</sup> 17.9 ppm 0.1 c/s/ft <sup>3</sup>	Employee, wearing respirator removed deflector from converter.
			1230 - 1300		0.63 mg/m <sup>3</sup> 15.1 ppm 0.1 c/s/ft <sup>3</sup>	Employee, wearing respirator replaced deflector plate.
			1300 - 1330		0.09 mg/m <sup>3</sup> 8.1 ppm 0.1 c/s/ft <sup>3</sup>	Employee, wearing respirator, replaced pipe from compressor to converter. 1311: In place and clamp attached.
			1330 - 1400		0.02 mg/m <sup>3</sup> 1.1 ppm 0.1 c/s/ft <sup>3</sup>	1325: Welding started.
			1400 - 1430		0.01 mg/m <sup>3</sup> 0.9 ppm 0.0 c/s/ft <sup>3</sup>	Employee, wearing respirator, welded pipe in place.
			1430 - 1500		0.01 mg/m <sup>3</sup> 1.1 ppm 0.1 c/s/ft <sup>3</sup>	
			1500 - 1530		0.01 mg/m <sup>3</sup> 0.4 ppm 0.0 c/s/ft <sup>3</sup>	

COPY TO:

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

NUMBER 262 Page b
 Routine   
 Special 

 Requested by J. C. Worthington  
 Date 6-3-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
I-602-1	3-23-60	Cell No. 1 Stage No. 1	0915 - 0920	Uranium Hydrogen Fluoride Alpha Activity	0.15 $\mu\text{g}/\text{m}^3$ 6.1 ppm 1.2 c/m/ $\text{ft}^3$	Two employees, wearing respirators, cut pipe out.
			0920 - 0925		0.03 $\mu\text{g}/\text{m}^3$ 3.7 ppm 0.0 c/m/ $\text{ft}^3$	
			0925 - 0930		0.02 $\mu\text{g}/\text{m}^3$ 3.6 ppm 0.0 c/m/ $\text{ft}^3$	Employee, wearing respirator, cut converter open.
			0930 - 0935		0.08 $\mu\text{g}/\text{m}^3$ 6.2 ppm 0.0 c/m/ $\text{ft}^3$	
			0935 - 0940		0.08 $\mu\text{g}/\text{m}^3$ 16.2 ppm 0.1 c/m/ $\text{ft}^3$	Employee, wearing respirator, chipped slag from converter opening.
			0940 - 0945		0.05 $\mu\text{g}/\text{m}^3$ 9.1 ppm 0.0 c/m/ $\text{ft}^3$	
			0945 - 0950		0.01 $\mu\text{g}/\text{m}^3$ 9.4 ppm 0.1 c/m/ $\text{ft}^3$	Employee, wearing respirator, tack welded converter flange in place.
			0950 - 1000		0.01 $\mu\text{g}/\text{m}^3$ 2.1 ppm 0.1 c/m/ $\text{ft}^3$	Op 555: Cover placed over flange and employee, wearing respirator, began welding it in place.

COPY TO:

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

NUMBER 262 Page 5  
 Routine   
 Special   
 Requested by J. C. Worthington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-603-1	3-22-60	Cell No. 1 Stage No. 1	1100 - 2030	Uranium Hydrogen Fluoride Alpha Activity	0.02 mg/m <sup>3</sup> 1.9 ppm 0.0 c/m/ <sup>3</sup> 0.01 mg/m <sup>3</sup> 1.1 ppm 0.1 c/m/ <sup>3</sup> 0.15 mg/m <sup>3</sup> 16.1 ppm 0.0 c/m/ <sup>3</sup>	1105: Cover removed from flange and employee, wearing respirator, removed deflector from converter.
			1030 - 1130		0.07 mg/m <sup>3</sup> 10.1 ppm 0.1 c/m/ <sup>3</sup>	
			1130 - 1230		0.05 mg/m <sup>3</sup> 10.5 ppm 0.1 c/m/ <sup>3</sup>	Employee, without respirator, cleaned inside of converter.
			1230 - 1330		0.02 mg/m <sup>3</sup> 1.6 ppm 0.0 c/m/ <sup>3</sup>	1315: Pipe was replaced.
			1330 - 1430		0.01 mg/m <sup>3</sup> 0.8 ppm 0.1 c/m/ <sup>3</sup>	1325: Two employees, with respirators, began welding pipe to converter.
			1430 - 1530		0.01 mg/m <sup>3</sup> 0.6 ppm 0.1 c/m/ <sup>3</sup>	Employee, without respirator, welded pipe in place.

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

Routine   
 Special   
 Requested by J. G. Wartlington  
 Date 6-6-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
K-602-1	3-29-60	Cell No. 1 Stage No. 1	1430 - 1500  1500 - 1530	Uranium Hydrogen Fluoride Alpha Activity	0.01 mg/m <sup>3</sup> 0.7 ppm 0.1 c/m/ft <sup>3</sup>  0.01 mg/m <sup>3</sup> 0.2 ppm 0.1 c/m/ft <sup>3</sup>	1515: Welder moved to next stage.
K-602-4	4-7-60	Cell No. 3 Stage No. 10	0920 - 0925  0925 - 0930  0930 - 0935  0935 - 0940  0940 - 0945  0945 - 0950  0950 - 0955  0955 - 1000	Uranium Hydrogen Fluoride  Alpha Activity	0.01 mg/m <sup>3</sup> 0.6 ppm  0.02 mg/m <sup>3</sup> 1.2 ppm  0.08 mg/m <sup>3</sup> 1.0 ppm 0.6 c/m/ft <sup>3</sup>  0.25 mg/m <sup>3</sup> 1.8 ppm 3.9 c/m/ft <sup>3</sup>  0.02 mg/m <sup>3</sup> 1.2 ppm  0.04 mg/m <sup>3</sup> 0.6 ppm  0.05 mg/m <sup>3</sup> 2.8 ppm  0.01 mg/m <sup>3</sup> 0.6 ppm	Employees cut converter open.  Employees replaced flange on converter.  Employee, wearing respirator, tack welded flange on converter.  0935: Converter flange covered.  Employees, wearing respirator, welded flange on converter.

COPY TO:

**INDUSTRIAL HYGIENE**  
**AIR SAMPLING REPORT**

NUMBER 262 Page 7
 Routine   
 Special   
 Requested by J. C. Worthington  
 Date 6-8-60

BUILDING OR AREA	DATE	SAMPLING LOCATION	SAMPLING TIME	CONTAMINANT	RESULT	OBSERVATIONS AND REMARKS
E-602-A	4-7-60	Cell No. 3 Stack No. 20	1000 - 1030 1030 - 1100 1100 - 1130	Uranium Hydrogen Fluoride	0.01 mg/m <sup>3</sup> 0.3 ppm 0.01 mg/m <sup>3</sup> 2.0 ppm 0.02 mg/m <sup>3</sup> 3.3 ppm	Cover removed from converter opening. Employees, wearing respirators, removed deflector from inside converter. 1119: Pipe in place and clamps attached.
			1130 - 1220		0.01 mg/m <sup>3</sup> 2.0 ppm	Employees, without respirators, swept floor of cell.
			1220 - 1250		0.01 mg/m <sup>3</sup> 0.3 ppm	Employees, wearing respirator, clamped pipe to converter and compressor.
			1250 - 1320		0.01 mg/m <sup>3</sup> 0.2 ppm	Employees, wearing respirator, welded equipment in place.
			1320 - 1350		0.01 mg/m <sup>3</sup> 0.2 ppm	
			1350 - 1405		0.01 mg/m <sup>3</sup> 0.4 ppm	1400; welding completed.